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Naoki Yoshinaga

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EXAMINER

SHEVIN, MARK L

ART UNIT

PAPER NUMBER

1793

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/574,053	<b>Applicant(s)</b> YOSHINAGA ET AL.	
	<b>Examiner</b> MARK L. SHEVIN	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/21/2009</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 1-8, filed June 9<sup>th</sup>, 2009 are pending.

### ***Acknowledgement of RCE***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 24<sup>th</sup>, 2009 has been entered.

### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted April 21<sup>st</sup>, 2009 in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner. Please refer to applicants' copy of the 1449 form submitted herewith.

### ***Status of Previous Rejections***

4. The previous rejection of claims 1-4 under 35 U.S.C. 103(a) over Kawabe (JP 2001-226741) in the Office action dated December 8<sup>th</sup>, 2008, have been withdrawn in view of the amendments to claim 1.
5. The previous rejection of claims 5-8 under 35 U.S.C. 103(a) over Kawabe (JP 2001-226741) in view of Marder (Vol. 20 of ASM Handbook...) in the Office action dated December 8<sup>th</sup>, 2008, have also been withdrawn in view of the amendments to claim 1.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 1-8** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 requires that the thin steel sheet have a microstructure "...composed of bainite or bainitic ferrite as a main phase" but there is no guidance as to what amount of bainite or bainitic ferrite (by area or volume percent) constitutes the "main phase." The specification at p. 18, lines 5-10 references "This is made 30% or more in area rate" apparently referring to the content of bainite or bainitic ferrite but this does not define what level of phase is sufficient to meet the claimed status of "main phase".

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 103***

7. **Claims 1-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuhara (US 6,364,968 B1).

Yasuhara:

Yasuhara discloses a thin high-strength, hot-rolled steel sheet with a composition (Abstract, col. 4, lines 30-55, and claims 1-4) as shown in the comparative table below:

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<b>Element</b>	<b>Yasuhara</b>	<b>Claims 1-2</b>	<b>Overlap</b>
<b>C</b>	0.05 – 0.30	0.030 – 0.10	0.05 – 0.10
<b>Mn</b>	1.5 – 3.5	1.7 – 2.49	1.7 – 2.49
<b>P</b>	0 – 0.02	0.001 – 0.02	0.001 – 0.02
<b>S</b>	0 – 0.005	0.0001 – 0.006	0.0001 - 0.005
<b>Al</b>	0 – 0.150	0 – 0.060	0 – 0.060
<b>N</b>	0 – 0.02	0.0001 – 0.0070	0.0001 – 0.007
<b>Si</b>	0.03 – 1.0	0.54 – 0.65	0.54 – 0.65
<b>Ti</b>	0.005 – 0.2	0.01 – 0.055	0.01 – 0.055
<b>Nb</b>	0.003 – 0.20	0.012 – 0.055	0.012 – 0.055
<b>Mo</b>	0.02 – 1.0	0.07 – 0.55	0.07 – 0.55
<b>B</b>	0.0005 – 0.004	0.0005 – 0.004	0.0005 – 0.004
<b>Cr</b>	0.02 – 1.0	0.01 – 1.5	0.02 – 1.0
<b>Ni</b>	0.02 – 1.0	0.01 – 2.0	0.02 – 1.0
<b>Cu</b>	0.02 – 1.0	0.001 – 2.0	0.02 – 1.0
<b>Co</b>	n/a	0.01 – 1	n/a
<b>W</b>	n/a	0.01 – 0.3	n/a
<b>Fe</b>	Balance	Balance	Balance

The steel sheets have a microstructure of fine bainite grains at an area percentage of not less than 90% (col. 4, lines 54-56).

The method of producing the sheets includes steps of (col. 5, lines 1-16):

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- i) heating a steel slab to a temperature of not higher than about 1200 °C,
- ii) hot rolling the slab at a finish rolling end temperature of not lower than about 800 °C,
- iii) starting to cool a hot-rolled steel sheet within about 2 seconds after the end of the hot rolling step,
- iv) continuously cooling the hot-rolled steel sheet down to a coiling temperature at a cooling rate of about 20 - 150 °C/s, and
- v) coiling the hot-rolled steel sheet at 300 - 500 °C.

Tables 3 and 5 disclose inventive steels with TS above 780 MPa, yield ratios between 0.64 and 0.90,  $TS \times EI^{1/2}$  of greater than 3320, and  $YR \times TS \times EI^{1/2}$  of more than 2320.

Yasuhara does not disclose a maximum value of CTS where  $(CE+1.5) KA$  is 0.8 or more.

Regarding claims 1-4 it would have been obvious to one of ordinary skill in metallurgy, at the time of the invention, to produce a high yield ratio, high strength thin steel sheet as Yasuhara discloses thin hot-rolled steel sheets of an overlapping base steel composition, produced by a substantially similar process as stated ( overlaps the requirements of claim 9), and possessing bainite as the main phase of not less than 90% (col. 4, lines 54-56).

With respect to the overlapping base steel composition of Yasuhara, it would have been obvious to one of ordinary skill in metallurgy to select any portion of the composition ranges, including the claimed ranges, from the overlapping ranges

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disclosed in Yasuhara because Yasuhara finds that the prior art composition in the entire disclosed ranges has a suitable utility and the normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). From MPEP § 2144.05: In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). In addition, "[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a prima facie case of obviousness." *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003). Also see, *In re Geisler* 43 USPQ 2d 1365 (Fed. Cir. 1997) and *In re Malagari*, 182 USPQ 549, 554 (CCPA 1974).

With respect to the compositional formula " $1.1 \leq 14 \times \text{Ti} (\%) \dots$ ", it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357,553 O.G. 177., 57 USPQ 1 17, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. *In re Austin, et al.* 149 USPQ 685,688. It would have been obvious to one of ordinary skill in the art to select alloy compositions

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fulfilling the claimed compositional relationships from the alloy compositional ranges disclosed by Yasuhara.

With respect to the claimed mechanical properties of yield ratio,  $TSx(EI)^{1/2}$ ,  $YRxTSx(EI)^{1/2}$ , and maximum tensile strength, Tables 3 and 5 of Yasuhara disclose inventive steels with TS above 780 MPa, yield ratios between 0.64 and 0.90 (and between 0.72 and 0.90),  $TSxEI^{1/2}$  of greater than 3320, and  $YRxTSxEI^{1/2}$  of more than 2320.

With respect to the maximum value of CTS ((CE+1.5) KA is made 0.8 or more) and the intensity ratio of a {110} plane parallel to the sheet surface at 1/8 thickness, one of ordinary skill in metallurgy would have reasonably expected the prior art of Yasuhara to possess these claimed properties as Yasuhara discloses thin hot-rolled steel sheets of an overlapping base steel composition, produced by a substantially similar process as stated ( overlaps the requirements of claim 9). The combination of an overlapping base composition processed by a substantially similar (overlapping) processing method produces the reasonable expectation.

Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Furthermore, from

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MPEP 2112, para. V, subpara 1: "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on 'inherency' under 35 U.S.C. 102, on '*prima facie* obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same..." The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

8. **Claims 5-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yasuhara** (US 6,364,968 B1) as applied to claims 1-4 above, in further view of **Marder** (Arnold R. Marder, Effects of Surface Treatments on Materials Performance, in *Materials Selection and Design, Vol. 20 of the ASM Handbook*, (1997), p. 1-10).

Yasuhara discloses that various surface coatings may be optionally formed on the steel sheet by processes such as hot dipping (col. 13, lines 65-67) however Yasuhara neither discloses a further hot-dip galvanizing nor a galvannealing (alloying) process.

**Marder**

Marder teaches that steels are often coating with a layer of zinc by a hot-dip galvanizing process to improve corrosion resistance (p. 4, para 1). Marder further teaches that weldability, in particular the spot weldability, of zinc coatings is an

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important property because most galvanized product is joined using spot welding (p. 6, para 1).

With respect to galvanneal coatings (galvanizing followed by alloying by diffusion in a later annealing stage), formability is important because if the forming operation cracks the zinc coating, corrosion resistance will be lessened (p. 7, para 2). Furthermore, galvanneal coatings offer improved spot weldability and paintability over galvanized coatings (p. 7, para 2).

Regarding claim 5-8, it would have been obvious to one of ordinary skill in metallurgy, at the time the invention was made, to incorporate the hot-dip galvanizing and hot-dip galvannealing coatings of Marder into the steel sheet product of Yasuhara as Marder taught that a galvanized product has increased corrosion resistance and in particular, galvanized products have improved spot weldability and paintability which would motivated one interested in producing steel sheets as these products are usually use in automotive applications as taught by Yasuhara (col. 1, lines 8-15).

### ***Response to Applicant's Arguments:***

9. Applicant's arguments filed June 9<sup>th</sup>, 2009 have been fully considered but they are moot in view of the new grounds of rejection applied in the instant Office action.

### ***Conclusion***

**-- Claims 1-8 are rejected**  
**-- No claims are allowed**

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The rejections above rely on the references for all the teachings expressed in the texts of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588 and fax number is (571) 270-4588. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy M. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

**/Mark L. Shevin/**  
Examiner, Art Unit 1793

October 7th, 2009  
10/574,053

/George Wyszomierski/  
Primary Examiner  
Art Unit 1793